



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR 6 — CHART INFORMATION

SECTOR 6

EAST COAST OF INDIA (THE COROMANDEL COAST AND THE ORISSA COAST)—POINT CALIMERE TO BALISAHİ POINT

Plan.—This sector describes the E coast of India, from Point Calimere to Balisahi Point, and includes the Coromandel Coast and the Orissa coast within its limits; Madras and Vishakhapatnam are the main harbors. The descriptive sequence is from S to N as far as Cocanada and then NE to Balisahi Point.

General Remarks

6.1 The E coast of India, from Point Calimere N to Cocanada, is about 500 miles long and is known as the Coromandel Coast. That part of the coast between Cocanada and Balisahi Point, about 364 miles NE, is known as the Orissa Coast.

The low, sandy coast fronting the W side of the Bay of Bengal is exposed to a very heavy surf. As a result, there is little or no shelter provided for vessels other than small craft. The harbors at Madras and Vishakhapatnam are the only large ports providing shelter and berthing facilities for all classes of vessels. The coast S of Madras appears to have been encroached upon by the sea to a considerable extent.

Between Pondicherry and Madras, scattered hills rise to heights of 46 to 198m, at distances of 2 to 16 miles inland. Similar hills lie in the vicinity of Nellore, and as far N as the Gundlakamma River.

Between Godavari Point and Shortt Island, about 360 miles NE, the coast is low and barren in places and relatively high and densely wooded in other places. With the exception of Cocanada and False Bays, there are no indentations of any appreciable size.

The depth curves generally parallel the coast with the 200m curves lying about 15 to 25 miles offshore between Godavari Point and the mouth of the **Devi River** (19°59'N., 86°24'E.).

Winds—Weather.—Changes in the monsoons are usually accompanied by bad weather. Cyclonic storms, although rare, sometimes occur near the middle of November or the beginning of April. The rainy season commences toward the end of June and ends in the latter part of November.

Tides—Currents.—The direct effect of the Northeast Monsoon and the Southwest Monsoon winds on the surface waters of the Bay of Bengal is the development of seasonal currents in opposite directions.

Along the E coast of India, on the W side of the bay, it is not unusual to experience currents setting with velocities of 2 to 3 knots. From February through May, a strong current sets to the N, and from September through December, a similar current setting to the S may be experienced. A survey party found currents with velocities of 1 to 2 knots outside the 45m curve, less current between the 35 and 18m curves, and little or no current inside the latter curve. Close to the shore, the current was occasionally reversed.

When the current was setting to the N in the offing, a set out of Palk Strait was usually found, and presumably the reverse takes place when the current sets to the S. Tidal currents are



Point Calimere Light

experienced close offshore and they vary the strength of the current in the neighborhood of Middle Banks in Palk Strait.

Point Calimere to Madras

6.2 Point Calimere (10°18'N., 79°52'E.) is the southernmost extremity of the Coromandel Coast and the NW entrance point of Palk Strait. The following conspicuous objects lie in the vicinity of the point:

1. Point Calimere Light.
2. Kodyakkarai Bungalows, about 3 miles WSW of the point.
3. Two dark-colored pagodas about 5 miles N of the point and 1 mile inland. These pagodas are shaped like oblong haystacks and are in range 270°.

Depths—Limitations.—Between Point Calimere and Madras, there are no charted or known dangers seaward of the 35m curve.

The 120m curve lies about 2 to 16 miles offshore, lying at its greatest distance off the E of Point Calimere.

An 8.7m detached shoal lies about 7.5 miles ENE of Point Calimere. A drying sand bank extends about 2 miles NE of the same point. During bad weather small craft shelter inside this bank.

Nagapattinam Shoal, about 5 miles long and composed of hard sand and stones, lies parallel to the coast about 4 to 5 miles offshore. The N end of this shoal lies about 6.8 miles SE of Nagapattinam Light. Depths over this shoal range from 6.1 to 8.5m.

Several 18.3m patches lie outside the 18m curve, about 12.5 to 17.5 miles NE of Pondicherry Light.

The coast between Point Calimere and Nagapattinam, about 28 miles to the N, is low and fringed by trees. Sand ridges, 3 to 10m high, also fringe the coast.

The two dark-colored pagodas, previously described above, and the church at Velanganni, about 5 mile S of Nagapattinam, are the only distinguishable landmarks between Point Calimere and Nagapattinam.

6.3 Nagapattinam (Negapatam) (10°46'N., 79°51'E.) ([World Port Index No. 49350](#)), the principal port of the Thanjavur District, lies at the mouth of the Uppanar River. Vessels anchor in the roadstead off the port to work cargo.

Nagapattinam has been reported to be a good radar target up to 17 miles.

During the Northeast Monsoon, the predominant wind is from the NE at a force of 6 to 7. The port is closed to shipping at this time. During the Southwest Monsoon, the wind is W a force 6.

In general, the currents off Nagapattinam set with the wind and vary with its direction and force. The tides off the port are semidiurnal.

A minaret at Nagore, 46m high, about 3.3 miles N of Nagapattinam, can be seen before the adjacent coast becomes visible. Upon closer approach, the lighthouse at Nagapattinam, the tall church spire to the NW and two chimneys at the railway workshop to the SW, are conspicuous from the offing.

The 10m curve lies about 2 miles off the port; the depths shoal gradually toward the shore.

There is a least depth of 1.2m over the bar which crosses the mouth of the Uppanar River. The river channel leading to the river quays has a dredged depth of 2.4m. Cargo lighters must have a draft of less than 1.2m to cross the bar and enter the river. The sea breaks over the bar in nearly all weathers and crossing can be dangerous for boats unless carefully handled. Boats are not permitted to cross the bar after dark.

Anchorage.—The anchorage off Nagapattinam is open to all but W winds; the holding ground of mud and sand is good. Vessels usually anchor according to drafts and the state of the weather, with the lighthouse bearing between 290° and 260°. Vessels of moderate draft can take good anchorage, in a depth of 7.8m, about 1.3 miles E of the lighthouse. In heavy weather, a short broken sea is encountered; during the Northeast Monsoon it is inadvisable to anchor in depths of less than 9.1m.

A signal station which vessels at anchor can communicate with using the International Code of Signals by day, and the Morse Code by night, is located 0.1 mile NNE of the old lighthouse. Flags of the International Code of Signals are displayed from the station to assist vessels in anchoring on the most suitable bearing from the lighthouse; Flag K indicates a bearing of 260°, with each subsequent letter indicating a 5° increase to Flag Q, which indicates a bearing of 290°.

Storm signals are displayed from the lighthouse in accordance with the [Indian Extended System](#).

All cargo is handled at the anchorage by lighters. About 114 of these lighters are available, each with a capacity of 40 tons. These lighters unload and load at the river's quays at HW.

6.4 Nagore (10°50'N., 79°50'E.) lies at the mouth of the Vettar River, about 3.3 miles N of Nagapattinam. The river mouth is obstructed by a bar with a least depth of 1.2m.

Anchorage can be taken about 1 mile E of Nagore, in depths of 6.4 to 8.2m. The holding ground is good, but the anchorage is considered dangerous during the Northeast Monsoon.

The coast up to 9 miles N of Nagapattinam remains very flat and low. Two rivers, obstructed by bars at their mouths, flow into the sea between Nagore and Karikal. These rivers can be navigated by flat-bottomed boats only after heavy rains.

Karikal (10°55'N., 79°51'E.) ([World Port Index No. 49370](#)), a small town about 6 miles N of Nagore, lies on the N bank of the Arasalar River, about 1 mile within the entrance. Vessels anchor in the open roadstead off the river mouth and use local boats to handle cargo. The bar, which obstructs the river mouth, has a depth of 2.4m at HWS and is marked by breakers. It is dangerous to cross the bar in October, November, and December.

Depths off the port shoal gradually from the 18m curve, about 6 miles offshore, to a depth of 9.1m about 0.8 mile E of the port.

The lighthouse and the dome of the church at Karikal are conspicuous from the offing. The high minaret at Nagore is a good mark for vessels coming from the S.

Anchorage can be taken, in depths of 9.1 to 11m, mud and sand, with Karikal Light bearing 264°. This is reported to be the best anchorage along this coast. Vessels working cargo should anchor in suitable depths with the lighthouse bearing 285°.

The coast between Karikal and Cuddalore, about 50 miles to the N, is low with but few distinguishing features. Vessels occasionally anchor off the towns of Tranquebar, Tirumulaivasal, and Porto Novo.

6.5 Tranquebar (11°01'N., 79°51'E.), a small town about 6.5 miles N of Karikal, lies on the N bank of a river used only by native boats. An old fort and several white houses, visible from seaward, serve as landmarks. A grove of trees lies on the S side of the town.

The port of Tranquebar has been closed to commercial shipping.

Anchorage can be taken about 1 mile offshore, in depths of 10 to 11.9m, sand and mud, with the fort bearing 281°.

Two pagodas lie in the village of Kaveripattinam, about 7 miles N of Tranquebar. North of this village the coast commences to rise slightly.

Tirukkadaiyur Port, lies 3.3 miles N of Tranquebar. An SPM, with a 500m-radius safety zonesurrounding it, lies in position 11°04'N., 79°53'E. It is connected to the shore 1.3 miles W by a submarine pipeline.

Tirumullaivasal (11°15'N., 79°51'E.), a small town about 6.5 miles N of Kaveripattinam, lies on the N bank of the Kaveri River near the entrance. A flagstaff, 18m high, lies close N of the low customhouse building. This flagstaff is the only landmark visible on this part of the coast, and can be seen over the tops of the trees when approaching from the S.

Anchorage can be taken, in depths of 9.1 to 11m, mud, with the flagstaff bearing between 270° and 247°.

A shoal, about 1.5 miles long and lying parallel to the coast, was reported to lie about 7 miles N of Tirumullaivasal and 1.5 miles offshore.

The Coleroon River discharges into the sea through two mouths about 10 and 13.5 miles N of Tirumullaivasal. Coleroon Point is the N end of a long sandy spit which extends N between the two mouths. This point has been reported to be a good radar target up to 19 miles. The Coleroon River Bridge has been reported to be a good radar target up to 24 miles.

A shoal, over which the sea breaks heavily during the North-east Monsoon, was reported to extend about 2 miles offshore between the S mouth of the Coleroon River and a position NE of Coleroon Point. Vessels should not shoal to a depth of less than 27.4m by day or within a distance of 4 miles by night along this section of coast.

The four pagodas, although about 7 miles inland, can be seen over the trees when abeam of the Coleroon River, and have been reported to be good radar targets up to 20 miles.

Caution.—An oil field development area, best seen on the chart, lies about 10 miles SW of the mouth of the Coleroon River.

6.6 Porto Novo (11°30'N., 79°46'E.), a town about 3 miles NW of Coleroon Point, lies on the N bank of the Vellar River about 1 mile within the mouth. A white flagstaff on the N bank of the river entrance and the two white boundary markers, one N and one S of the town, are conspicuous landmarks.

A light is shown from a white tower with red bands, 30m high, 0.8 mile N of the flagstaff.

An anchorage should be taken, in a depth of 16.5m, about 3 miles offshore, from the middle of October until nearly the end of December. During fine weather in the other months, anchorage can be taken closer to shore according to draft. All cargo is handled by native craft at the anchorage.

The coast between Porto Novo and Cuddalore, about 13 miles to the N, is low and marked by scattered trees. From the offing, the few sandhills which are visible appear as islets.

Cuddalore (11°43'N., 79°46'E.) ([World Port Index No. 49410](#)) port area comprises the open anchorage off the town and the backwater formed by the confluence of the estuaries of the Gadilam River and the Uppanar River, both of which are subject to heavy flooding in the rainy season. The old town, which shows up well from the N, especially the buildings to the E, lies on the Uppanar Backwater; the new town lies on the Gadilam River, about 1 mile N of the old town.

A conspicuous lighthouse, with a tall flagstaff close N of it, lies close to the coast on a sandhill abreast the old town.

Cuddalore has been reported to be a good radar target up to 21 miles.

Depths off the port shoal gradually from the 18m curve about 3.5 miles E of the port, to the 5m curve about 0.3 to 0.5 mile offshore.

A shifting boat channel, marked by range beacons, crosses the bar at the entrance of the Uppanar River 0.8 mile S of the lighthouse. This channel has a least depth of 1.2m.

A signal station, by which vessels can communicate by Morse code, lies close S of the lighthouse. Storm signals are displayed in accordance with the [Indian Extended System](#).



Cuddalore Light

When surf conditions require the closing of the channel across the bar, flag K of the International Code of Signals is displayed. Flag M indicates a strong ebb current, and flag S, a strong flood current.

An anchorage can be taken, in a depth of 11m, about 1 mile offshore, with the lighthouse bearing between 295° and 310°. An anchor boat will indicate the approximate position where vessels may anchor clear of the two dangerous wrecks shown on the chart.

An anchorage for vessels carrying dangerous cargo is situated 2.5 miles E of the S breakwater.

During the Northeast Monsoon, vessels are advised to anchor N of the river entrance and S of the entrance during the Southwest Monsoon.

All cargo is handled by boats and lighters at the anchorage. About 350 lighters, from 15 to 45 tons, are available for day-light use only.

6.7 Pondicherry (Pondicherri) (11°56'N., 79°50'E.) ([World Port Index No. 49430](#)), the capital and seat of government of the Union Territory of Pondicherry, lies about 13 miles N of Cuddalore. All cargo is handled by lighters at the anchorage off the town.

The low sandy shore S of the town is marked by trees. The land, from 3 to 5 miles NW and N of the town, is 45 to 73m high and helps to identify the locality.

Pondicherry Light (11°54.9'N., 79°49.9'E.) transmits a racon from a white tower with a black band. A ruined iron pier projects E about 0.2 mile from the shore, 1 mile NNE of the light.

The following landmarks are conspicuous from the offing:

1. Rodiar chimney, 56m high, about 1 mile WNW of the light.
2. Two square towers and cupola of the cathedral about 1 mile NNE.
3. The port flagstaff about 0.5 mile NNE of the light.
4. A conspicuous TV tower lying 0.4 mile WSW of the port flagstaff.

Pondicherry has been reported to be a good radar target up to 18 miles. Pondicherry Hills, which lie 3 to 5 miles NW and N of the town, have been reported to be good radar targets up to 24 miles.

Depths surrounding the port range from the 20m curve, which lies about 2.5 miles E of the port, to about the 5m curve, which lies about 0.3 mile from the shore.

During the Northeast Monsoon, which usually prevails from October through January, rough seas are raised, hampering cargo operations. During the rest of the year the prevailing wind is from the W in the morning; a choppy sea is raised by the SE wind in the afternoon.

A signal station lies at the inner end of the new pier at the S end of the town. Vessels can communicate with the station by using the International Code of Signals by day and Morse code at night.

Storm and weather signals are displayed from the signal station; the [General System](#) is used.

Local quarantine and port regulations are in force in Pondicherry. A copy of these regulations can be obtained from the local port authorities.

The new pier is located about 0.7 mile S of Pondicherry Light. The pier is about 287m long and 15.2m wide across the outer face. Cargo is handled by lighters between the anchorage and this pier. About 50 small lighters, with a capacity of 2.5 tons each, are available for cargo handling.

During good weather, anchorage can be taken, in depths of 9.1 to 11m, about 0.8 mile off the coast at Pondicherry. From October to December, when bad weather may be expected, it is advisable to anchor about 1 mile farther offshore, using a good scope of chain. The holding ground is not very good.

Anchorage can also be taken, in depths of 9.1 to 11m, about 0.5 mile E of the head of the new pier. At this anchorage the powerhouse chimney and Rodiar Chimney are in line, bearing 276.5°.

6.8 The coast between Pondicherry and Madras, about 76 miles NNE, is low and backed in several places by hills which are conspicuous for some distance seaward.

Allamparwa Fort (12°16'N., 80°01'E.), in ruins, lies on the N entrance point of Kaliveli Lagoon about 22 miles NNE of Pondicherry. A dark prominent grove of trees lies close N of the fort. Some hills, which rise to heights of 73 to 198m, lie NW of the fort about 6 to 16 miles inland.

The **Palar River** (12°28'N., 80°10'E.), marked by some tall coconut trees on the N side of its entrance, is obstructed by a bar. A shoal spit, marked by breakers, extends about 1 mile E from the entrance.

Sadras, a small village abreast hidden by trees, lie about 3 miles N of the Palar River. A brick fort, in ruins, lies on the coast abreast of the village and is visible from seaward.

Sadras hills, the most conspicuous hills on this part of the coast, lie about 7 to 10 miles WNW of the entrance of the Palar River. The highest peak rises to an elevation of 215m. Finger Peak, 152m high, lies 1.3 miles ESE of this peak. A conspicuous temple lies on Finger Peak. Several other conspicuous peaks lie in the vicinity.

Mahabalipur, a rocky point with several pagodas on it, lies about 6 miles NNE of Sadras Fort. A light stands on a conspicuous rock about 0.5 mile within the extremity of the point.

The lighthouse has been reported to be a good radar target up to 16 miles.



Mahabalipur Light

Tripalur Reef (12°37'N., 80°12'E.), a rocky ledge with a depth of 7.9m at its outer edge, extends about 0.8 mile E from Mahabalipur.

Rockingham Patches (12°41'N., 80°15'E.), a group of shoal patches with a least depth of 4.6m, lies up to 1.5 miles offshore about 4.5 miles NNE of Mahabalipur Light.

6.9 Covelong Point (12°47'N., 80°15'E.), a small projection with a village on it, lies about 11 miles NNE of Mahabalipur Light. The point has been reported to be a good radar target up to 13 miles.

Open anchorage can be taken, in a depth of 12.8m, about 1 mile E of the village on Covelong Point. Care should be taken to avoid the rocks, awash, which extend about 0.3 mile NE from the point.

The low coast between Covelong Point and Madras, about 18 miles to the N, is clear of dangers.

Ottivakam Hill (12°48'N., 80°07'E.), 167m high, sharp and conspicuous, lies 8 miles W of Covelong Point at the S end of a low range of hills which extend along this coast for 7 miles. Panchapandavar Malai (Pallavaram) Hills, high and double peaked, lie about 10 miles N of Ottivakam Hill. A temple lies on the highest peak and is prominent. St. Thomas Mount, about 3 miles farther NE, is crowned by some conspicuous white buildings.

Perumbakam Hill, 80m high and flat-topped, lies about 7 miles NW of Covelong Point and is a fair landmark.

A Submarine Exercise Area lies with its center about 20 miles ENE of Covelong Point. A good lookout should be maintained in the vicinity.

Madras (Chennai) (13°06'N., 80°18'E.)

[World Port Index No. 49450](#)

6.10 Madras (Chennai), the capital and seat of government of Madras State, is the principal harbor on the Coromandel

Coast and the third largest port in India. The harbor area, which is entirely artificial, fronts the center of the city, and contains ample berthing facilities for all classes of vessels.

Port Authority of Madras

<http://www.chennaiporttrust.com>

Winds—Weather.—Cyclones at Madras usually commence with the wind between NNW and NNE, the wind direction changing to the E or W according to whether the port is in the right-hand or left-hand semicircle of the storm. The Madras coast is normally frequented by cyclones during May, October, and November.

Rainfall is almost entirely confined to the period from November to January during the Northeast Monsoon. In April and May, there are occasional squalls from the NW, usually in the early part of the night.

Weather reports are broadcast by the radio station at Madras.

The climate of Madras is considered quite hot. Even in the cooler months of December and January, the mean temperature is about 25°C.

Tides—Currents.—The tides at Madras are semidiurnal and subject to a diurnal inequality which may advance or retard the times of HW and LW; this inequality may increase or diminish the rise by as much as 0.3m.

Vessels may encounter a strong S current when making the approach to the harbor.

Depths—Limitations.—The approach channel, marked by the [IALA Maritime Buoyage System \(Region A\)](#), is dredged and maintained at a depth of 19.2m. Vessels are to keep at least 0.5 mile off the channel entry unless a pilot is on board.

The harbor entrance is maintained to a depth of 18.6m, and there is a swinging basin, 0.3 mile in diameter, lying immediately inside the harbor entrance with a maintained depth of 18m. In 1986, it was reported the port could accommodate vessels up to 274m length, with a draft of 16.2m.

Bharathi Dock, the N part of the harbor, is protected by the North Breakwater and East Breakwater, and a light shows near the head of East Breakwater. Oil terminal berths with alongside depths from 16 to 17.4m are located on the E side of Bharathi Dock for tankers up to 274m long with a draft of 14.6m. An iron ore berth with a depth of 17.4m alongside and with fully mechanized handling facilities is located at the NW corner of the dock. It was reported (1988) to have a handling capacity of 8,000 tons per hour. Plans (1990) is to deepen the ore berth, turning circle and the approach channel to accept bulk carriers up to 170,000 dwt.

A fully mechanized container terminal having an alongside depth of 11m is located close NW of North Pier. The berth is 400m long; work was in progress (1994) to increase the length by an additional 290m.

The S part of the harbor, forming the Inner Harbor is protected by East Quay. The entrance lies between North Pier and a spur projecting from East Quay; it is 122m wide with a depth of 9.4m and marked by lighted beacons at each side of the entrance. The protecting breakwater N of the spur is known as the sheltering arm, and a light shows at the head of the arm. In 1965, the inner harbor had a least depth of 9.4m over the greater part of it. Vessels with a draft of 9.1m can enter harbor

at all states of the tide. The inner harbor contains twelve berths alongside the quays and five vessels at fixed moorings. At the moorings, vessels between 107 and 229m long, having between 7 and 9.6m drafts, can berth.

Jawahar Dock, entered along the mid-section of South Quay of the inner harbor, has six berths, each with 218m frontage. The berths can handle vessels of 200m length and drawing 11m draft. The S end of the dock is used by LASH barges.

Madras Fishing Harbor is located 1 mile N of Bharathi Dock and is sheltered by two extensive breakwaters which provides berths for up to 500 fishing vessels.

In 1986, an area between the root of Fishing Harbor East Breakwater and the root of Bharathi Dock North Breakwater was being reclaimed.

Depths off the harbor shoal gradually from the 20m curve, about 1.5 to 2 miles offshore, to a depth of 11m less than 0.3 mile E of the breakwaters.

The surf N and S of the harbor generally breaks about 122m from the beach in fine weather and about 183m in squally weather. During gales from the E, breakers were observed about 244m offshore; with an offshore wind, the surf is often very high and in the form of a heavy roller. During normal weather the surf wave is about 0.9 to 1.8m high, and during a gale from 3 to 3.7m high.

Aspect.—In the vicinity of Madras, the low sandy shore is marked by casuarina and palm trees N and S of the city.

The following landmarks are conspicuous from the offing:

1. The main tower of the Court House standing about 1.3 miles SW of the outer harbor entrance.
2. Fort St. George, with its 52m high flagstaff about 0.5 mile S of the Court House.
3. A building, 57m high, about 1.5 miles SW of Fort St. George.
4. The spire of San Thome Cathedral, 49m high, almost 3 miles S of Fort St. George.
5. The 40m high University Clock Tower, about 0.8 mile S of Fort St. George.
6. Two high radio masts close N of Fort St. George.
7. Three high cooling towers about 1.5 miles NW of the Court House.
8. A white-domed building, 23m high, standing at the mouth of the Adyar River.

Madras Breakwater has been reported to be a good radar target up to 8 miles. The Court House has been reported to be a good radar target up to 22 miles. Madras Harbor is formed by two breakwaters; contained within is the inner harbor in the S. The inner harbor extends farther S and connects into two separate basins, on the W with the boat basin having a yacht club, on the E with Jawahar Dock. The harbor is protected from the N and NE by North Breakwater and East Breakwater, which extend about 0.5 mile SE, then 0.4 mile SSW from a position 2.3 miles NNE of the Fort St. George flagstaff. From the E and SE of the entrance, it is protected by East Quay and New Outer Arm, which extends about 2 miles NE from the same flagstaff. A light shows from the New Outer Arm and the approach channel entrance lies about 3.5 miles ENE of the light.

Foul areas are centered 2 miles N and 2 miles ESE from the harbor entrance.

Pilotage.—Pilotage is compulsory for vessels over 200 grt. No merchant vessel is allowed to enter or leave Madras Harbor without a pilot on board, unless prior permission has been given in writing by the Conservator of the port.

Vessels are taken in or out of the harbor at any time of the day or night. Movements in and out of Jawahar Dock are restricted to the hours between 0600 and 2200 daily.

Vessels less than 230m long await the pilot in Waiting Area No. 1, about 1 mile NE of the harbor entrance. Vessels 230m long and over board the pilot in Waiting Area No. 2, about 1.5 miles further NE.

Vessels bound for the Chemical Pipeline Terminal board the pilot in the waiting area centered on 13°13'N, 80°22'E.

A strong, reliable pilot ladder, equipped with man-ropes, must be provided, otherwise the pilot will not board. Masters of vessels are cautioned to leave ample room for the pilot to maneuver the vessel for entering the harbor.

When approaching the harbor or the anchorage, a sharp watch should be kept for signals from the Port Signal Station. Ships agents normally pass berthing messages to vessels through the Port Signal Station and only in case of failure do they contact vessels by radio.

Regulations.—Copies of the port regulations for the Port of Madras are available to entering vessels. Instructions and regulations which masters should be cognizant of before arrival are, as follows:

1. Only one vessel at a time may enter or leave the harbor.
2. Ballast, bilge water, and trash shall not be pumped or thrown overboard within the limits of the port.
3. All ocean-going vessels entering or leaving the port between sunrise and sunset must fly their national flag, and when entering, each vessel must show her number.
4. Vessels remaining outside the harbor, within the roadstead or port limits, are required to take positions, with allowances made for swinging room, well clear of the entrance of the harbor.
5. The master of any vessel arriving at Madras Roadstead, with explosives on board as cargo, must give immediate notice thereof to the pilot or harbor master.
6. Vessels arriving with explosives on board are not permitted to enter the enclosed harbor. They are moored at the explosives anchorage E of the harbor entrance, where the explosives are discharged into lighters. The maximum quantity of explosives which can be handled is 125 tons.
7. Vessels carrying explosives in transit are not permitted to enter the harbor, nor will they be allowed to discharge the cargo at the explosives anchorage.

Vessels may obtain radio pratique upon request, not more than 12 hours or less than 4 hours prior to arrival. Otherwise, pratique is granted by the Port Health Officer upon arrival.

Customs officials board a vessel at its berth or mooring inside the harbor.

Signals.—The Port Signal Station is located on the Harbor Office on the seaward end of the Transit Shed and Passenger Terminal on North Pier. International Code of Signals Flags and Morse code are employed. It has been reported that at a distance of 2 or 3 miles from the harbor, the signal tower can easily be mistaken for one of the breakwater light structures.

A black ball, displayed at the Port Signal Station, indicates a vessel in the harbor is getting underway and will be leaving the harbor. Vessels approaching the harbor should, until the pilot assumes control, remain clear of the outer end of the sheltering arm and allow sufficient sea room for the outbound vessel.

Vessels about to leave should display the International Code flag N at the fore; vessels about to enter should display International Code pennant 4 at the fore. Neither of these signals should be displayed until the pilot is aboard.

Storm and weather signals are displayed at the signal station on North Quay in accordance with the [Extended System](#).

During the prevalence of suspicious or threatening weather, or upon the warning signal being displayed, the master of every vessel anchored within the limits of the roadstead is required:

1. Not to be absent from the vessel between sunset and sunrise.
2. To keep the vessel prepared in every respect to proceed to sea on short notice.
3. To proceed to sea without waiting for instructions should it be deemed it prudent to do so.
4. When the danger signal is displayed, to take such measures for securing the safety of the vessel as may be considered necessary. No further instructions on that point will be furnished by port authorities.

Masters of vessels must use their own discretion whether to proceed to sea or remain in the harbor in cyclonic weather. Preference for mooring berths will be given to vessels with bulk cargo and to those vessels which have broken their cargo.

Anchorage.—Madras Roadstead is open to all except off-shore winds. There is usually a swell from seaward which causes vessels to labor or roll considerably.

Vessels awaiting berth on arrival are not to anchor N of latitude 13°06'N., and within Pilot Boarding Area No. 1 or Pilot Boarding Area No. 2, without prior approval from Port Control.

A dangerous wreck, with masts exposed, lies about 0.8 mile SE of the harbor entrance.

An Examination Anchorage area is shown on the chart.

Vessels of less than 230m in length should embark the pilot in Waiting Area No. 1, located about 1 mile E of the harbor entrance; those of more than 230m in length should embark the pilot in Waiting Area No. 2, located 3.3 miles ENE of the harbor entrance.

At night, vessels should not anchor in depths of less than 16.5m. A second anchor should be ready to let go and all anchors should be buoyed.

A submarine cable extends offshore from a position approximately 1 mile S of the Fort St. George flagstaff.

Vessels carrying explosives must anchor in the explosives anchorage located about 1 mile E of the harbor entrance. Such vessels are required to display a red flag by day and a red light at night.

Vessels unable to enter the harbor during periods when cyclones may be expected should anchor well offshore and be ready to put to sea before the wind shifts to the NE. Vessels remaining at anchor or anchoring too far in during such times may find it impossible to get away and are likely to be driven ashore.

Caution.—Vessels are advised to be on the lookout for pirates attempting to board at night, especially in the vicinity of the pilot boarding area.

The roadstead fronting the harbor area is subject to a heavy surf.

Madras to Masulipatam

6.11 The coast between Madras and Machilipatnam, about 240 miles N and NE, is low, sandy, and marked by a number of small towns. Madras and Krishnapatnam are the only ports of any size available to ocean-going vessels.

Between Madras and Machilipatnam there are no known or charted dangers seaward of the 35m curve.

Ennur Shoal (13°17'N., 80°23'E.), with depths of 0.9 to 8.5m, extends 2.5 miles NE from a position on the coast about 10.5 miles NNE of Madras Harbor.

Pulicat Shoals (13°22'N., 80°23'E.), a chain of hard, sandy patches with depths ranging from 4.3 to 9.1m, extends about 7.5 miles NNE from the N end of Ennur Shoal. Several detached patches, with depths of 8.2 to 11m, lie within 3.8 miles N and NNW of the N end of Pulicat Shoals. These shoals were reported to be extending to the E.

Armagon Shoal (13°54'N., 80°18'E.), with depths ranging from 3 to 9.1m, extends about 15 miles N from a position 1.5 miles NE of Point Pudi. A narrow, detached shoal, about 2.5 miles long, with depths of 10 to 11m, lies close N of the N end of Armagon Shoal. The sea sometimes breaks over the shallowest part of Armagon Shoal.

A shoal, with a least depth of 4.9m, lies about 2.3 miles offshore abreast of **Tummalapenta** (14°54'N., 80°04'E.). The depths are very irregular in the vicinity of this shoal and up to 7 miles N of it.

6.12 Mutapolli Bank (15°26'N., 80°21'E.), with depths of 6.4 to 11m, lies centered about 11 miles E of Kottapatnam. Overfalls usually mark this bank. Two detached shoals, with depths of 10 to 11m, lie within 5.8 miles SW and three detached shoals, with depths of 9.1 to 11m, lie within 11.3 miles NE of this bank.

Caution.—Care should be taken when navigating along this section of coast between Madras and Machilipatnam because the land is often obscured by haze.

The currents N of Madras vary considerably in velocity and direction and sometimes set toward the land. Great caution is necessary.

In the vicinity of Pulicat Shoals, the current is weak and sets parallel to the coast.

In the approach to Blackwood Harbor, the current along this part of the coast, which includes Armagon Shoal, usually sets with the prevailing wind, but at times reverses itself.

The current off False Divi Point sets parallel to the coast with the prevailing monsoon, having its greatest velocity near the 185m curve about 8 miles offshore.

In Nizampatam Bay, weak tidal currents are experienced inshore only at spring tides.

During March, the current off Divi Point has been found to set E at a rate of 1.5 knots. The coast between Madras and Ennur, about 9.5 miles NNE, is bordered by plantations of casuarina and palm trees. A conspicuous white temple, 10.7m

high, lies about 6 miles NNE of Madras Light. A factory and a conspicuous water tower lie 7.5 miles NNE of the same light. A prominent water tower, 35m high, lies 0.5 mile NE of the above-water tower.

Anchorage can be taken, in depths of 11.9 to 12.8m, about 1 mile off the entrance of Ennur. Vessels bound for Ennur enter and clear at Madras Harbor. The coast between Ennur and Pulicat, about 10.8 miles to the N, is backed by an extensive plain which is densely wooded near the beach. The town of Pulicat lies on an island at the S end of Pulicat Lake and is visible from the offing. A tall conspicuous monument lies close N of the lighthouse near the beach.



Pulicat Light

Anchorage can be taken, in depths of 11.9 to 12.8m with Pulicat Light bearing 270°, distant 2.5 miles.

6.13 The Nagari Hills (13°34'N., 79°37'E.) lie about 30 to 45 miles inland abreast Pulicat and the coast to the N. Nagari Nose, a sharp peak 858m high with its upper part crooked, lies about 45 miles W of Pulicat Light. This peak is visible only in clear weather.

A beacon lies about 13 miles NNW of Pulicat Light but is not conspicuous from seaward.

The coast between Pulicat and Point Pudi, about 22 miles NNW, is marked by casuarina plantations for about 11 miles N of Pulicat Lake. A conspicuous clump of coconut trees, 24m high, lies on a sandhill about 1 mile S of Point Pudi.

Point Pudi (13°47'N., 80°15'E.), a low, sandy point, is marked by clumps of palm trees. Armagon Shoal, which extends N from Point Pudi, has been previously described in paragraph 6.11.

Armagon Light is shown from a white round concrete tower with red bands, lying near the coast 7 miles NNW of Point Pudi.

Gudali Hill (14°01'N., 80°01'E.), about 13 miles NW of the disused lighthouse, is flat and 90m high with a pagoda near its center. The hill is conspicuous except from positions near the outer part of Armagon Shoal.

A beacon lies on the shore about 13 miles NNW of the disused lighthouse.

An anchorage, formerly known as Blackwood Harbor, lies between Armagon Shoal and the coast to the W.

Anchorage can be taken, in a depth of 9.1m, good holding ground, with the disused lighthouse at Armagon bearing between 282° and 290°. During the Southwest Monsoon, anchorage can be taken with the disused lighthouse bearing 259°, distant 2.8 miles.

Vessels approaching the anchorage should not shoal to a depth of less than 30m until the disused lighthouse bears 207°, or Gudali Hill bears 259°. Gudali Hill should then be steered for on this heading, passing N of Armagon Shoal in depths of 11m.

6.14 Krishnapatnam (14°17'N., 80°08'E.), an ore-loading port, lies near the mouth of the Upputeru River about 28 miles NNW of Point Pudi. Cargo is handled by lighters in the roadstead fronting the river. Coasting vessels usually anchor about 2 miles seaward of the river entrance, in depths of 10.1 to 11m, but this anchorage is only safe during good weather.

Storm signals are shown; the [Brief System](#) is used.

Casuarina plantations line the coast up to 3 miles N of the mouth of the Upputeru River, then abruptly changes to sandhills for 5 miles and becomes low and sandy as far N as the Penner River, about 13 miles farther N.

Shallinger Shoal (14°23'N., 80°12'E.), a spit with depths of 3.2 to 4.6m, extends about 2.5 miles NE from the coast, 7.5 miles N of the mouth of the Upputeru River. A detached 5.5m patch lies 1.5 miles S of the NE extremity of Shallinger Shoal.

The **Penner River Entrance** (14°35'N., 80°11'E.) is not easily distinguished as the river enters the sea behind a sandy point which is only 1m high. Nellore, the chief town of the district, lies on the S bank of the river about 15 miles inland. A white pagoda lies on a high hill about 6 miles W of Nellore, but is not very prominent. The pagoda is sometimes visible between the bearings of 248° and 293°.

During fine weather with offshore winds, anchorage can be taken off the mouth of the Penner River, in depths of 9.1 to 12.8m, sand and mud, about 1.5 miles offshore.

A flagstaff, visible above the trees, lies on the beach at Isakapalli Village about 10 miles NNW of the mouth of the Penner River.

Nishanbotu (14°42'N., 79°56'E.), the N end of a mountain range which parallels the coast, lies 10 miles WSW of Isakapalli.

Anchorage can be taken off Isakapalli, in depths of 12.8 to 14.6m, sand and mud, about 1 mile offshore SE of the flagstaff. The holding ground is good, but a heavy surf sets onto the beach.

Between Isakapalli and Ramaypatnam, about 19 miles to the N, the coast continues low and sandy for 7 miles, but becomes tree covered for the remaining distance.

6.15 Ramaypatnam Village (15°03'N., 80°03'E.) is marked by a church and some high clumps of casuarinas. The red church spire is visible over the trees. Tettu Temple, white in color and 41m high, lies 2 miles W of the village, but is not very prominent. Ramaypatnam Light is shown from a hexagonal concrete tower lying on the coast 0.8 mile NE of the church at Ramaypatnam.

Between Ramaypatnam and the town of Kottapatam, about 25 miles NNE, the coast remains low and sandy. Several detached clumps of casuarinas lie near the coast between Ramaypatnam and the entrance to the Upputeru River, about 10.5 miles to the N. Singarayakonda Temple, painted red, lies on a 51m high hill about 3.5 miles W of the Upputeru River, and is one of the few conspicuous landmarks between Rama-

ypatnam and Kottapatam. The rising ground near the temple is visible in places between the trees.

The **Paleru River** (15°19'N., 80°06'E.), marked by a beacon on its S entrance point, discharges about 6 miles N of the Upputeru River mouth.

Kandalur and Konijedu, two hills connected by a ridge, lie about 11 miles W of Kottapatam and are useful marks. Chimakurti, 638m high, lies 22 miles WNW of Kottapatam and is also a useful mark.

Kottapatam (15°26'N., 80°10'E.), of little importance commercially, lies about 1 mile inland. A prominent white obelisk, about 15m high, lies about 1 mile NW of the town.

A shoal, with a least depth of 2.7m, lies about 1.5 miles offshore and from 3 to 5 miles NE of the town. Depths of 7.3m and less lie between this shoal and the shore. Shoal patches, with depths of 5.5 to 8.5m, lie up to 7 miles E of the town. Mutapolli Bank has been previously described in [paragraph 6.12..](#)

During good weather, anchorage can be taken 2.3 miles offshore, in a depth of 9.1m, with Kottapatam bearing 295°. Depths should not be shoaled to less than 18.3m until certain of the vessel's position.

6.16 Nizampatam Bay (15°42'N., 80°33'E.) lies between Kottapatam and False Divi Point, about 41 miles ENE, and recedes about 14 miles to the N. Except for the shoals in the vicinity of Mutapolli Bank, the bay is free from dangers and its shores may be approached with safety to a depth of 9.1m.

A backwater is formed 4 to 6 miles NNE of Kottapatam by the confluence of the Mudigorda Yeru River and the Gundlakamma River. During fine weather, the latter river is available to small boats.

A beacon lies about 0.5 mile within the Mudigorda Yeru River..

From the mouth of the Gundlakamma River, the bay shore curves NE for about 35 miles to the entrance of a creek leading to the town of Nizampatam. Dindi House, a large building with a big, high tree close E of it, lies on the N entrance point of the creek.

Between Dindi House and False Divi Point, almost 13 miles to the SE, the coast remains low and sandy. A beacon lies on the NW entrance point of a boat creek about 5 miles E of Dindi House.

False Divi Point (15°43'N., 80°50'E.) is low and covered by small mangroves.

A bank, which dries in patches, extends about 1 mile S and about 3 miles W of False Divi Point.

Anchorage can be taken in Nizampatam Bay, in a depth of 9.1m, mud, about 6 miles offshore, with Dindi House and the conspicuous tree at Nizampatam bearing 021°.

Coastal vessels can anchor, in 9.1 to 11m, sand and mud, about 1.5 miles off the village of Vadarevu, 19 miles NNE of the Gundlakamma River. A flagstaff and a conspicuous bungalow lie on the shore fronting the village.

The **Krishna River** (15°45'N., 80°54'E.) rises in Bombay State and flows E across the peninsula of India, into the Bay of Bengal by several branches, the mouth of one being near False Divi Point.

The enormous amount of silt carried by the river has formed a wide alluvial delta which extends seaward between the towns

of Nizampatam and Machilipatnam. Divi Point is the SE extremity and False Divi Point is the SW extremity of the delta. Ocean-going local craft use the river for about 6 months of the year.

Krishna Old Light, a white masonry tower 44m high, lies about 9.5 miles ENE of False Divi Point. Another old lighthouse, a similar structure 15m high, lies 2.3 miles NW of Divi Point and is maintained as a landmark.

Machilipatnam to Godavari Point

6.17 The coast between Machilipatnam and Godavari Point, about 97 miles distant, is generally low, sandy, and intersected by several rivers. The shore in places is densely wooded, and between the mouth of the Gautami Godavari and Godavari Point, the terrain is very low. Along this latter section of coast distances judged by eye may be in error because of sand haze.

Ravva Oil Field Development Area, best seen on the chart, extends up to 15 miles offshore. There are numerous lit and unlit structures and submerged obstructions in the area. Not all hazards may be charted.

Between Machilipatnam Point and Godavar Point, no other dangers exist seaward of the 20m curve which lies between 1.5 and 10 miles offshore. Between the mouth of the Guatami Godavari and Godavari Point the 15m curve never lies more than 2.5 miles offshore.

Sacramento Shoal (16°32'N., 82°20'E.), hard shifting sand, lies off the entrance to the Guatami Godavari and extends about 4 miles SE and 3.5 miles E from Sacramento Light. Depths over this breaking shoal range from 2.7 to 5.5m. This shoal is subject to frequent changes in position and depth.

Tides—Currents.—The current from January through April sets steadily to the NE along the coast between Machilipatnam and Godavari Point. In the vicinity of Sacramento Shoal a rate of 4 knots is usually experienced about 5 miles offshore.

The current in the bay to the W of Narasapur Point is weak and variable.

6.18 Machilipatnam (Masulipatam) (16°09'N., 81°09'E.) ([World Port Index No. 49460](#)), the only port of the Krishna District, lies about 5 miles within the mouth of the creek of the same name about 11 miles N of Divi Point. Vessels anchor in the roadstead to handle all cargo to and from native lighters.

New Machilipatnam Light is shown from a white, round, concrete tower with black bands, 3.8 miles NNE of the mouth of Machilipatnam Creek.

There are six lighter wharves, with a total length of 675m, within the port area; three of these wharves lie on the tidal side of the lock; the remainder are in Machilipatnam Canal.

Groynes are under development to protect the entrance to the creek and to increase depths at the entrance.

Depths in the approach to the port range from 11m, about 5.3 mile E of the entrance of the creek, to a depth of 1.8m about 1 mile offshore.

When approaching the port, the following objects are prominent:

1. Karameda Beacon, 13.7m high, about 2 miles N of the main lighthouse.

2. A chimney, with an elevation of about 29m, 1.5 miles NNW of Karameda Beacon. This chimney is reported to be the first object sighted when approaching from the E.

Storm and weather signals are displayed at Machilipatnam; the [General System](#) and the [Brief System](#) are used.

Anchorage.—The roadstead is large and the holding ground, fine sand and mud, is good.

From January through September, vessels should anchor according to draft, with the lighthouse bearing 270°, and from October through December, with the lighthouse bearing 288°.

The coast between Machilipatnam and Narasapur Point, about 32 miles ENE, is low, sandy, and densely wooded in places.

An inconspicuous beacon, about 6.1m high, stands on the coast 11.5 miles NE of Machilipatnam Light. A beacon stands on the coast 19.3 miles NE of the same lighthouse.

6.19 Narasapur Point (16°18'N., 81°43'E.), low and wooded, lies on the E side of the mouth of the Vasishtha Godavari, which is the southernmost branch of the Godavari River. An obelisk, 24.4m high, lies about 1 mile N of the point.

Antarvedi Light is shown, and a radiobeacon transmits, from a white square masonry tower, with red bands, lying 0.3 mile ENE of the obelisk.

Between Narasapur Point and the mouth of the Vanteyam Godavari River, about 15 miles ENE, the low coast is densely wooded. The entrance to this river is known as Warreo; during freshets, a spit forms off it. Two large prominent clumps of casuarinas lie on the E side of the river entrance. This section of coast may be approached safely to depths of 18.3m.

During January and February, the current sets W at a maximum rate of 2 knots off the coast between Narasapur Point and the mouth of the Vanteyam Godavari.

The entrance of the Guatami Godavari lies about 23 miles ENE of the entrance of the Vanteyam Godavari. Only small craft with local knowledge can enter the river in fine weather.

The river is joined by two tributaries close within its mouth; during the rainy season the outgoing current may attain a rate of 4 knots.

The coast between the mouth of the Gautami Godavari and Godavari Point, about 24 miles to the N, is very low and intersected by many small outlets.

Sacramento Shoal, which lies off the mouth of the Gautami Godavari, has been previously described in paragraph 6.17.

6.20 Masanutippa Temple (16°39'N., 82°19'E.) stands near the coast, about 3 miles N of the Gautami Godavari, and is one of the few objects that can be identified between the entrance of the Gautami Godavari and Hope Island to the N. The temple is not conspicuous.

Hope Island (16°49'N., 82°20'E.), one of a chain of similar islands which form part of the delta of the Godavari River, is low, swampy, and covered with jungle. A black and white banded, disused lighthouse stands on Hope Island.

Anchorage can be taken by small vessels with local knowledge E of Masanutippa, in a depth of 7.3m, mud, about 1 mile offshore. Anchorage can also be taken 2 miles S of Sacramento Light in a similar depth.

Godavari Point to Ganjam

6.21 Godavari Point (16°59'N., 82°20'E.) is the N extremity of a low, sandy spit and narrow sandbank, which forms a part of the coast N of Hope Island. It had been reported (1974) the point had extended to a position 0.8 mile NW of Godavari Point light, shown from a white pillar with black bands on Godavari Point.

The coast between Godavari Point and Ganjam, about 215 miles NE, is mostly low, sandy, and backed by conspicuous hills at various distances inland. Between Pudimadaka, about 50 miles NE of Godavari Point, and Kalingapatam, about 80 miles farther NE, the coast is broken and rocky. Some of the headlands in the vicinity of Vishakhapatnam are bold and prominent. The coast between Kalingapatam and Ganjam becomes fairly regular with a few slight indentations.

Tides—Currents.—The current between Godavari Point and Bimlipatam lies farther offshore than off Sacramento Shoal, but its velocity is less. Inshore of this current, slack water is usually found. Tidal currents will sometimes be experienced close offshore. In July and August, the velocity of the offshore current is less than 1 knot.

The currents off the coast from Bimlipatam to Gopalpur, between December and June, are mainly influenced by the wind, the tidal current, even at springs, having very little effect. In December and January, when NE winds prevail, the current about 1 mile offshore sets steadily SW parallel to the coast at a velocity of 0.5 to 0.8 knot.

Toward the end of February, the wind hauls around to the SW, and in March, blows steadily from that quarter. In the morning the wind is generally light, but freshens during the afternoon to a force of 5 to 6. The current at this time sets NE parallel with the coast; its velocity close inshore is about 0.5 knot. At 10 miles or more off the coast, its velocity is frequently 2 to 3 knots.

The greatest velocity of the current observed between Santapilli Rocks and the mainland was 1 knot.

Depths—Limitations.—Between Godavari Point and Ganjam there are no known or charted dangers between the 18m and 35m curves. The former curve lies between 0.5 and 6 miles offshore and the latter curve between 2 and 9 miles offshore.

Santapilli Rocks (Chintapalli Rocks) (18°01'N., 83°43'E.), with a least depth of 1.5m and dangerous wrecks close E, lie between 5.5 and 6 miles SE of Santapilli Light. The sea breaks heavily over these dangers with a moderate swell, but not in good weather.

The channel between these rocks and the mainland is safe only during daylight. At night, vessels should keep in depths of over 35m when Santapilli Light bears between 322° and 290°.

The summit of an isolated, bare, red double-peaked hill, 117m high, about 2 miles N of Santapilli Light, in line bearing 304° with Kandivalasa Peak, leads N of Santapilli Rocks. Santapilli Light in line bearing 322° with Kandivalasa Peak, leads S of these rocks.

6.22 Cocanada Bay (Kakinada Bay) (17°00'N., 82°19'E.) ([World Port Index No. 49470](#)), a shallow body of water filled with extensive drying mud flats at its head, is entered between Godavari Point and the coast about 2.8 miles WNW. For many

years the bay has been silting up because of the discharge from the Godavari River, about 8 miles S of the entrance, but is the safest natural harbor on the E coast of the Indian subcontinent. The town and port of Cocanada lie on the W side of the bay, about 2 miles within the entrance of the Cocanada River.

The low bay shores are subject to periodic inundations during cyclonic storms.

The port of Cocanada comprises a partly exposed anchorage located about 3 to 4 miles NNE of the entrance of the Cocanada River and is suitable for ocean-going vessels; cargo is transported by lighters between the anchorage and the wharves on the river bank abreast of the town.

Tidal current effects are noticeable nearly 0.5 mile off Godavari Point. The current follows the contour of the land, with the flood current having a maximum velocity of 0.5 knot and the ebb current having maximum velocities of 1.5 to 2 knots.

In Cocanada Bay, the flood current sets SW and the ebb current sets NE. These tidal currents are strong at springs, especially from October to February, and must be taken into consideration when approaching in this vicinity.

Tides at Cocanada are semidiurnal.

The coastal waters in the approach to Cocanada Bay have shoaled considerably more than shown on the chart. Depths are reported to be 2.7m less than charted.

Depths S of a line drawn between Godavari Point and Vakalapudi Light to the NW shoal gradually to a depth of less than 1.8m about 4 miles to the S. Depths N and E of this line range from 7.3 to 11m, about on the meridian of Godavari Point. Depths in the dredged buoyed channel leading to the barge facilities on the banks of the Cocanada River average about 2.1m. Depths alongside the lighter wharves range from 1.2 to 2.1m.

North of Cocanada, the land appears bold, with high land extending NE; S of the port, the low sandy coast is marked by some sand hills and trees.

In the approach to the port, the disused lighthouse on Hope Island, Godavari Point Light, and Vakalapudi Light are conspicuous landmarks.

A signal station is located at Vakalapudi Light. Vessels can communicate with the station by Morse code.

Anchorage in the bay, E of Vakalapudi Light, is subject to considerable ground swell from the SE, even when there is no wind. During the Northeast Monsoon, good anchorage for vessels of suitable draft can be taken in depths of 5.9m SW of Godavari Point, with Vakalapudi Light bearing 316°, distant 3.8 miles.

Safe anchorage can be taken, in a depth of 5.5m, soft mud, with Vakalapudi Light bearing about 321°, distant 2.8 miles. Vessels anchor here in all seasons, about 3 miles from the mouth of the Cocanada River, communication is seldom impeded. The sea within the bay is usually smooth. Additional anchorage is provided with Vakalapudi Light bearing 318°, distant about 1.5 miles. Little current is experienced at these anchorages. During the flood, the tide is usually slack and sets NE during the ebb.

Caution.—Vessels are advised not to anchor between 1 mile and 1.8 miles N and NW of Godavari Point Light, because of the numerous wrecks which lie in this area. Some of these wrecks are dangerous to surface navigation.

There is a foul patch about 0.4 mile NNW of the point, with dangerous wrecks within 0.5 mile N of the foul patch. Other foul areas, best seen on the chart, lie NNE and NE of Godavari Light.

During the Northeast Monsoon, vessels should make a land-fall near Pentakota, 30 miles NE of Cocanada, and should then run along the coast in depths of not less than 21.9m. By day, when Vakalapudi Light bears about 248°, course should be shaped for the anchorage. At night, Vakalapudi Light should be kept on that bearing until the depths decrease to 18.3m, when course should be altered to 230°, keeping the Cocanada River Entrance Light on that bearing when sighted until reaching the channel lighted buoys.

Extensive developments, including the construction of wharves and breakwaters and the establishment of dredged areas and dumping grounds, have taken place in Cocanada Bay. Depths may also be less than charted.

It has been reported (1998) that three deep-water cargo berths, one for liquid cargo and two for general cargo, have been constructed and that vessels up to 25,000 dwt can be accommodated.

6.23 The coast, up to 10 miles NE of Vakalapudi, is low and marked by numerous villages and coconut trees. Low sandhills then appear and continue as far as Pentakota, about 16 miles farther NE.

Round Hill (17°22'N., 82°16'E.), 653m high, lies about 22 miles N of Vakalapudi Light and shows up well from positions near Cocanada.

Upada (17°04'N., 82°20'E.), a port of call for small local coasters, lies on the coast about 4.5 miles NE of Vakalapudi Light.

Pentakota, a small village, lies at the mouth of a river about 21 miles NE of Upada. A coconut grove lies near two fairly high sandhills near the entrance of the river. A white temple stands on a high hill about 4 miles NW of the village. Sudikonda, a high cone-shaped hill, lies 2.5 miles N of the same village. Both the temple and the hill are good landmarks. The hill is the most conspicuous because of its shape and color.

Between Pentakota and the Dolphins Nose, about 45 miles ENE, the coast is backed by a series of rounded hills which lie on a plain and show up well at night. A prominent white obelisk stands on rising ground about 4 miles NE of Pentakota and 0.5 mile inland.

A beacon stands on a small, very prominent, rocky eminence at Pata Polavaram, about 13 miles ENE of Pentakota. Sanjib Peak, a remarkable, conical mountain with a flattened, broken summit, rises to a height of 652m about 11 miles NW of Pata Polavaram.

Wattara (17°25'N., 82°52'E.), a small village, lies at the common entrance of three small rivers, about 3.4 miles ENE of Pata Polavaram.

A beacon stands on a 185m high hill abreast of Rambilli Village about 4.8 miles ENE of Wattara.

Pudimadaka Village (17°30'N., 83°00'E.) lies on the shore of a bight about 4 miles NE of Rambilli Beacon. A red stone temple, with three towers, lies in the village.

6.24 Pillar Rock (17°29'N., 83°01'E.), 9.1m high, lies about 0.3 mile SSE of Pudimadaka Village. This rock and

some dark cliffs on the coast show up prominently against the white sandy beaches. A ledge of rocks lies between Pillar Rock and the coast, and serves as a breakwater during the Southwest Monsoon.

Anchorage can be taken, in a depth of 9.1m, with Pillar Rock bearing 214° and the sheds on the beach bearing 282°.

The coast between Pudimadaka Village and the Dolphin's Nose, about 20 miles NE, is rocky and backed by a hilly plain. Conspicuous sandy patches mark the SW sides of some of these hills. A rock on the beach, about 4 miles NE of Pillar Rock, appears as a low, black, double rock when viewed from the NE. Kutu Konda, a prominent, small, rocky headland marked by a beacon, lies about 10.5 miles ENE of Pillar Rock.

Pigeon Islet (17°37'N., 83°14'E.), 21m high and rocky, lies in a small bay 5 miles NE of Kutu Konda.

Dolphin's Nose (17°41'N., 83°17'E.), a bluff headland 163m high, is conspicuous when viewed from the NE or SW. A lighthouse, two radio masts, and a flagstaff stand on Dolphin's Nose.

Dolphin's Nose has been reported to be a good radar target up to 17 miles.

Caution.—A wreck, whose charted position is approximate, and which is dangerous to navigation, lies about 3 miles E of Dolphin's Nose.

Submarine Exercise Areas lie centered 20 miles SSE and E of Dolphin's Nose. A good lookout should be maintained when transiting these areas.

Vishakhapatnam (17°41'N., 83°18'E.)

World Port Index No. 49480

6.25 Vishakhapatnam, a port of growing importance and the fourth largest port in India, lies at the mouth of the Meghadri River, close NW of Dolphin's Nose. Port limits extend from Dolphin's Nose Light in the direction of 160° for 4.3 miles, then in the direction of 038° for 7.5 miles, then in the direction of 270° to a pillar on Scandal Point, 2 miles NE of the harbor entrance. Petroleum and iron ore products are the principal exports. The only shipyard in India capable of building ocean-going merchant vessels is in operation within the harbor area.

Ample berthing facilities are available to accommodate all classes of vessels. Extensive works are in progress to increase these facilities.

Winds—Weather.—Southwest winds prevail from March to August; NE winds prevail from October to December. During the day, the NE winds are fresh, but at night they are light and westerly. Heavy, windy, rain squalls occur during October and November, but most of the rainfall occurs from June through November.

A considerable swell is experienced almost all year in the vicinity of the port. Vessels have remained in the harbor with safety during cyclonic weather.

The climate is subtropical and varies from warm to hot, with high humidity throughout the year. Maximum temperatures occur in May, while minimum temperatures are usually recorded in December and January. Through May, June, and July, temperatures often exceed 38°C.

Tides—Currents.—From about August to November, the current sets SW; from about the middle of December through June, it sets NE. Inside the 35m curve, the current is much weaker than farther offshore. Close offshore tidal currents will sometimes be experienced.

Tides are semidiurnal.

Depths—Limitations.—In the seaward approach to the harbor, a depth of 18.3m exists about 0.8 mile E of the head of South Breakwater.

The entrance to the outer breakwater is 183m wide and dredged (1991) to a depth of 19m. The entrance to the inner harbor is dredged to a depth of 18m. In 1986, it was reported that there was a draft restriction of 10m in the port and only daytime navigation was allowed.

The ore berth, in the outer harbor, is dredged to a depth of 17.5m on its NE side and 17m on its SE side, and can accommodate two bulk carriers of 150,000 dwt. It has been reported that draft on the SW side of the ore berth was restricted to 15.3m. The entrance to the inner harbor has been dredged to 18m.

A turning basin, dredged to 17.5m lies at the N end of the entrance channel to the inner harbor. The three basins which project from the turning basins are all dredged to 17.5m. The entrance to the inner harbor is dredged to a depth of 18m.

A turning circle, dredged to 18m in 1991, lies between the berths and the entrance channel.

Berth Q1 to Berth Q4, which lie on the E side of the N arm, have alongside depths of 9.4m. Berth Q5 and Berth Q6 have alongside depths of 10.4m. The berths on the W side of the N arm, J1 to J3, have alongside depths of 9.4m and are used for oil, coal, and molasses..

There is a shipbuilding yard SW of the turning basin and a fitting out wharf lies on the S side of the W arm. Opposite this wharf, on the N side, are two berths connected by pipeline to the oil refinery. There is a fertilizer wharf close W of the oil berths which can accommodate vessels with lengths to 168m and 9.1m draft. Vessels whose length exceeds 171m or whose draft exceeds 9.1m, may only enter the harbor at HW between the hours of 0600 and 1800. Smaller vessels may enter at any time.

The mooring berths, which lie adjacent to the turning basin, have depths of 10.7m alongside the buoys. M1 Berth, between mooring buoys, lies close E of the turning basin.

A general cargo berth, accommodating vessels up to 232m long and 15.2m draft, is located SW of the ore berth; facilities at the berth include a conveyor system for the importation of coking coal. It has been reported (1996) that during the North-east Monsoon, the berth may be subject to considerable swell and vessels may have to be moved.

A berth for discharging oil is located close NW of South Breakwater. Tankers of 260m length and 14.3m draft can be accepted. A submarine oil pipeline is laid from the berth, W to a trestle bridge, then leads to the coast.

Aspect.—The landmarks which lie on Dolphin's Nose have been previously described in [paragraph 6.24](#).

Vishakhapatnam Fishing Harbor is separated from Outer Harbor by Groyne No. 2 which connects to East Breakwater and it is entered between N end of the East Breakwater and North Breakwaters. A light shows at the end of the North

Breakwater. Several jetties extend NE from Groyne No. 2 with a depth of 4.5m alongside the quayage.

Lights in line, bearing on 234.5°, located 0.2 mile SW of the North Breakwater Light, leads into the fishing harbor. A short breakwater extends SW from a position on the shore 0.3 mile NE of the head of North Breakwater and a light shows from its head.

In 1988, the work in the shipyard was completed and the ferry berths were in use.

A conspicuous white chapel, 67.7m high, lies on the summit of Ross Hill on the N side of the harbor entrance channel about 1 mile NNW of Dolphin's Nose Light. A conspicuous minaret lies on the E side of Dargah Hill about 0.2 mile E of the chapel. A conspicuous signal station lies at an elevation of 65m on Sand Hill about 1.25 miles NE of the chapel.

North of the port area, Circuit House flagstaff, 2.8 miles NNE, and the University clock tower, 3.5 miles NE of Dolphin's Nose Light, are also conspicuous from the offing.

Pilotage.—Pilotage is compulsory for power-driven and ocean-going vessels over 100 grt who wish to enter, depart, or shift berth within the harbor area. Pilots board 1.3 miles SE of South Breakwater Light.

Vessels bound for this port are required to request a pilot at least 48 hours prior to arrival with a 4-hour notice before ETA. Vessels planning to enter the harbor on the same day of arrival should arrive off the entrance prior to 2100 local time.

Regulations.—The following local port regulations are in force:

1. Only one vessel may enter or leave the harbor at a time.
2. Tugs are maintained to assist vessels, as necessary, in entering the harbor or shifting berths.
3. A pilot is required to be on board a vessel whenever a tug is employed.
4. Sailing vessels of 100 grt or greater shall not enter or leave the harbor unless towed by one or more tugs.
5. No ballast may be thrown or discharged overboard within the harbor limits.

Signals.—Signal Station No. 1, with a flagstaff 26m high, lies midway on the East Breakwater about 1 mile E of Ross Hill.

Signal Station No. 2 (Dufferin Signal Station), with a flagstaff, lies on the W side of Ross Hill, close E of another flagstaff, 68m high.

Sand Hill Signal Station lies about 1.8 miles NNE of the Dolphin's Nose Light.

These stations communicate visually with vessels approaching or departing the harbor.

The following signals are displayed for the use of entering and departing vessels:

1. Signal Station No. 1, upon sighting a vessel approaching the port, displays the International Code Flag P' until the pilot answers by the entering signal
2. Vessels entering the harbor must display International Code Pennant 4 and enter only after Signal Station No. 1 has repeated the signal hoist. A green metal pennant with a white circle hoisted at Signal Station No. 1 and Signal Station No. 2 indicates the channel is clear for shipping.
3. A vessel waiting to enter the harbor should, if International Code Pennant 1 is displayed at Signal Station

No.1, keep well clear of the entrance to allow the departing vessel plenty of room.

4. Vessels about to leave should display International Code Pennant 1 and proceed only after Signal Station No. 2 has repeated the signal hoist.

5. A vessel entering or departing at night and requiring a pilot displays a white light over a red light where it can best be seen by the signal stations.

Storm and weather signals are displayed; the [General System](#) is used.

Anchorage.—Vessels awaiting to enter the harbor should anchor, in a depth of 22m, about 1.5 miles E of Dolphin's Nose Light.

Because of the currents and shoaling on the N side of the entrance channel, vessels should not approach inshore of the anchorage without a pilot.

Vessels anchoring in the roadstead must leave sufficient room for vessels entering or departing. Anchors should be buoyed.

Anchorage is prohibited in an area at the inner end of the entrance channel, as shown on the chart.

An Examination Anchorage Area is enclosed by a line as shown on the chart.

Anchorage for petroleum tankers are situated 1.5 and 3 miles SE of Dolphin's Nose Light. A gas and explosives anchorage lies 3.5 miles SSE of the light.

It has been reported (1996) that during the Northeast Monsoon, vessels at anchor lie to the current, bow NE, regardless of wind and swell.

Directions.—Vessels approaching the harbor should pass through a position about 7 miles bearing 135° from Sand Hill Light, then steer 315° until a depth of 18.3m is sounded. Course should then be altered to bring the lighted entrance beacons in line bearing 280°, which lead through the entrance channel between the breakwater heads and into the harbor. The alignment of the various channel reaches leading into the inner harbor are well defined by lighted range beacons.

The coast between Vishakhapatnam and Bhimunipatnam, about 16 miles NNE, continues hilly.

Caution.—There have been a number of pirate attacks on merchant vessels in this area. Mariners are advised to keep a sharp lookout, especially at night, for pirates attempting to board their vessel.

6.26 Waltair Point (17°44'N., 83°21'E.), about 4.3 miles NE of the Dolphin's Nose Light, is low, sandy, and backed by red sandhills which show up well from the offing at times. Two houses on the side of a small hill about 4.5 miles NE, and the ruins of two houses on the summit of the Kailasa Range almost 4 miles N, respectively, of the N entrance point of Vishakhapatnam Harbor, are prominent. Rushi Hill, 154m high, conspicuous and topped by a beacon, lies 3.8 miles NNE of Waltair Point. Oppadu Konda, about 3.5 miles farther NNE, are 127m high and have the appearance of flat table lands with steep seaward faces. The high land terminates about 4 miles N of Rushi Hill and continues low as far as the Gostani River about 4 miles farther NNE. A few isolated, conical hills mark this latter stretch of coast. A large, high, conspicuous sandhill lies 2 miles SW of Bhimunipatnam Hill.

Caution.—Vessels should not anchor in foul ground which surrounds Waltair Point within a depth of 15m. Also, vessels should keep clear of spoil ground lying 0.5 mile SE of East Point Light.

A Submarine Exercise Area, in which submarines frequently exercise, lies with its center about 5 miles ENE of Waltair Point.

Bhimunipatnam (17°54'N., 83°29'E.) lies on the S side of the mouth of the large, shallow, Gostani River. Vessels anchor in the open roadstead off the town to work cargo. The town is built on the E slopes of a hill, 166m high, which is topped by some trees and a pyramidal obelisk. A white temple lies about midway up the E slope of the hill and shows up well when the sun shines on it. A tall factory chimney lies about 2.5 miles NNW of the town, and is a good mark.

In the approach to the roadstead, the depths shoal gradually from the 18m curve about 2 to 3 miles offshore to a depth of 11m at the anchorage 1 mile offshore.

Two wharves lie on the S shore of the river but are available only to lighters. Cargo is carried to these wharves from vessels at the anchorage.

Weather signals are displayed from a flagstaff close SW of the lighthouse; the [General System](#) is used.

Anchorage can be taken, in depths of 11 to 12.8m, sand and mud, with good holding ground, about 1 mile offshore abreast of the town. During the Southwest Monsoon, a vessel should anchor with the lighthouse bearing 264°; during the Northeast Monsoon, anchorage should be taken with the lighthouse bearing between 249° and 259°.

The coast between Bhimunipatnam and Konada, about 10 miles to the NE, is sandy and broken about midway along its length by some low red cliffs which show up well when the sun shines on them.

Annam (17°57'N., 83°29'E.), a prominent flat-topped hill 254m high and bare, lies about 3.8 miles NNE of Bhimunipatnam Light. Kaulvada, a high hill topped by a beacon, lies about 2 miles farther ENE.

6.27 Konada (18°01'N., 83°34'E.) lies at the mouth of a small river. Several white buildings and some trees lie on the N side of the river.

Anchorage can be taken, in depths of 9.1 to 11m, sand, off the river mouth.

The coast between Konada and Kalingapatnam, about 37 miles ENE, consists of a sandy beach backed by low sandhills. Kandivalasa, the highest and most prominent peak in this locality, rises to an elevation of 537m, about 7 miles N of Konada and appears nearly conical on all bearings from seaward.

Santapilli Rocks, which lie about 8.8 miles E of Konada, have been previously described in [paragraph 6.21](#).

Ramachandrapur, a flat-topped hill 164m high surmounted by a beacon, lies about 10.3 miles NE of Konada.

Agra Rock (18°07'N., 83°46'E.), with a least depth of 5.5m, lies about 3.5 miles E of Ramachandrapur. The sea seldom breaks over this danger.

The Nagavali River, which enters the sea about 14 miles ENE of Ramachandrapur, is shallow and available only to light-draft craft. A beacon stands on the E side of the entrance of the river.

Kalingapatam (18°20'N., 84°09'E.) lies close S of the mouth of the Vamsadhara River and about 1.5 miles NNW of Sandy Point. There are no berthing facilities. All cargo is transported by lighters from the anchorage in the roadstead. The town no longer has any importance as a trading center.

Kalingapatam has been reported to be a good radar target up to 27 miles.

The land in the vicinity of the port is low and flat but the locality may be identified by Sahliundam, an isolated ridge 125m high, which has its summit near its W end about 5.5 miles W of the town. This bare, prominent, wedge-shaped ridge has two white temples and a tree on its E slope.

Storm and weather signals are displayed in the town.

6.28 Satara Reef (18°20'N., 84°09'E.), which extends about 0.8 mile NE from Sandy Point, has general depths of 9.1m and a least depth of 6.4m at its outer end. The reef is steep-to on its N and E sides.

Considerably less depths than charted have been reported to exist in the roadstead.

An obstruction, with a least depth of 7.3m, was reported to lie about 1.5 miles NNE of Sandy Point.

Anchorage can be taken during the Northeast Monsoon, in a depth of about 9.1m, with the port flagstaff bearing about 284°, distant 0.8 mile. The coast between Kalingapatam and Pundi, about 26 miles NE, continues sandy and is backed by numerous isolated hills.

A tall black and white banded beacon lies on the beach at Bavanapadu Village, about 19 miles NE of Kalingapatam.

A rounded rocky point lies about 7.5 miles NE of Bavanapadu Village, and the entrance of Bendi Creek lies about 1 mile farther N. Pundi Village lies 0.8 mile above the entrance of the creek. A white obelisk and a flagstaff lie in the village. The village is not visible from the offing.

Bendi Hills, a flat range 175m high, lies about 3 miles NW of Pundi. Khirsinga Hill, small, red, and 51m high, lies on the coast about 1.5 miles NNE of the obelisk at Pundi.

Anchorage can be taken off Pundi, in depths of 12.8 to 14.6m, about 0.8 mile offshore, with the white obelisk bearing about 281°.

Rati Beacon (18°47'N., 84°32'E.), a 4.3m high obelisk, stands on a double-peaked hill, about 8 miles NE of Pundi and 0.8 mile inland. This hill lies at the end of a small range of about the same height which slopes down to the coast. This range is prominent when viewed from the NE or SW, and at a distance of 4 to 5 miles has the appearance of a headland. The steep Mahendragiri Range, about 15 miles NNW of Rati Beacon, rises to an elevation of 1,524m.

A rocky patch, with a depth of 11.9m, lies about 2.8 miles E of Rati Beacon.

6.29 Baruva (18°52'N., 84°35'E.), a small town of little importance to shipping, lies on the N bank of a river, about 6.3 miles NE of Rati Beacon. The customhouse and a few huts are the only objects in the town which can be seen from the offing. A group of trees SW of the customhouse is conspicuous.

Two beacons, about 64m apart, lie about 0.2 mile NE of the lighted beacon E of the town. The N beacon is black and white banded and the S beacon is white.

Anchorage can be taken, in a depth of 8.2m, sand and mud, with the lighted beacon bearing between 304° and 315°.

The coast between Baruva and Gopalpur, about 29 miles NE, is sandy and backed inland by ranges of hills. In the vicinity of Kaviti, about 10 miles NE of Baruva, the land rises gradually to an elevation of about 91m. The higher ranges inland are frequently obscured and are of little use to the mariner.

A masonry beacon lies on a large sandbank near the coast, about 9.8 miles NE of Baruva Lighted Beacon.

Kaviti Beacon (19°02'N., 84°42'E.), reported to be partially obscured by trees, lies on a plateau at an elevation of 85m, 2.5 miles NW of the masonry beacon.

Ichapur, a prominent sharp hill, rises about 4.5 miles N of Kaviti Beacon and is 156m high. Dandrasa, a 206m high hill, lies 5.5 miles NE of Ichapur. When viewed from the E, this hill appears round-topped, but when viewed from the S it appears as a long summit with two peaks. The W peak is slightly higher. Raegara, a conspicuous range with four peaks, lies 8 miles NW of Dandrasa.

Investigator Rock (18°58'N., 84°42'E.), with a least depth of 2.3m, lies about 8.5 miles NE of Baruva Lighted Beacon. The water over the rock is not discolored and it is not marked by breakers.

6.30 Sonnapuram (19°07'N., 84°47'E.), a small port on the N bank of the Bahuda River, lies about 17 miles NE of Baruva Lighted Beacon. A white obelisk and a white column, each about 15m high, lie on an islet in the entrance of the river. A customhouse, with a black flagstaff, stands on the beach at Sonnapuram.

Gopalpur (19°15'N., 84°55'E.), fronted by an open, exposed roadstead, lies about 11 miles NE of Sonnapuram. The town is no longer a port of call for ocean shipping.

Winds constantly blow along the coast near Gopalpur in March and April; the Southwest Monsoon usually breaks about in the middle of June. Farther N the winds are only occasional.

The currents usually set with the prevailing wind. About the middle of January, the NE current begins and by the middle of February it sets steadily ENE with velocities of 0.5 knot close offshore, and increasing to 1.5 knots about 12 miles offshore. At the latter distance it sets NE.

The NE current continues to run until July and then sets SW, gradually strengthening to a rate of 2 knots and more.

Anchorage can be taken, in a depth of 13.7m, sand and mud, with Gopalpur Light Tower, white round masonry with red bands, bearing 299°, distance about 0.6 mile. Anchorage can also be taken, in a depth of 13.7m, about 0.3 mile SW of the above position.

During the windy months, April to July, it is recommended that anchorage be taken, in a depth of 16.5m, with ample chain veered. Two hard patches, one 0.8 mile SSE and the other 0.7 mile E of Gopalpur Light, should be avoided when anchoring.

The coast between Gopalpur and Ganjam, about 12 miles NE, is marked by several isolated conspicuous hills which are visible over the coastal sandhills. Manusurukota, a rocky hill 54m high, rises about 2.3 miles N of Gopalpur. Landabaums, the easternmost of two hills, is 198m high and lies about 8 miles N of Gopalpur. This hill appears as a conical sugarloaf shape from all directions.

Ganjam to Balisahi Point

6.31 The coast between Ganjam and Balisahi Point, about 147 miles NE, is regular and intersected by numerous rivers. False Bay, a small, exposed indentation, lies between False Point and Shortt Island to the NE. The Dhamra River discharges N of this bay, to the W of Shortt Island, and to the S of Balisahi Point.

Chilka Lake, a large, shallow body of water, lies close to the coast between Ganjam and Puri, about 50 miles to the ENE.

With the exception of the high mountain ranges which rise N of Ganjam in the interior, this section of coast is generally low and sandy and marked in places by sandhills, scattered trees, and jungle growth. On a clear day, some of the mountain peaks inland are conspicuous and useful marks.

All of the known dangers which lie off this section of coast are mostly contained within the 18m curve which lies between 1.5 and 13.5 miles offshore. This curve lies at its greatest distance offshore in the vicinity of False Bay and to the E of Shortt Island.

Six detached 18.3m patches lie within 4.5 miles SE through 5.8 miles SSE of **Puri Light** (19°48'N., 85°50'E.).

Central Sand (19°58'N., 86°24'E.), a shoal with depths ranging from 0.4 to 9.1m, extends about 1.5 miles E through NE from **Devi Point** (19°59'N., 86°24'E.). A detached 5.5m patch lies about 1.5 miles S of the same point. Central Sand is reported to have extended about 1 mile farther SE. In fine weather, the sea does not always break over this shoal.

Palmyras Shoals (20°47'N., 87°12'E.), with depths of 2.3 to 10.1m, lie within a radius of 8 miles ENE through SE of the central part of Short Island.

Caution.—Care is necessary when approaching Palmyras Shoals from the E, because the depths decrease rapidly and soundings will give no warning of the proximity of these dangers.

Care is also necessary when navigating in the vicinity of False Point. The lighthouse is difficult to identify during a heat haze, because of its light-colored top and lack of background. During January through March, fog may occasionally obscure the light or cause it to show a deep red color. Frequent soundings should be taken and depths should not be shoaled to less than 20.1m.

During the Northeast Monsoon or with NE winds, the current in the vicinity of False Point generally sets to the W.

Tidal currents in the vicinity of Palmyras Shoals set at a rate of 2 knots at springs. On the NE side of the shoals, the flood sets to the NW and the ebb to the SE. At the S end of these shoals the flood sets to the N and the ebb sets to the S.

From the end of June to the end of November, there is little or no flood or W current off False Point and Palmyras Shoals, except at spring tides; a strong outset is experienced from the rivers during freshets.

Off False Bay the flood sets to the NW to N and the ebb sets SW, each at a velocity of about 1 knot. The velocity is greatly influenced by the prevailing winds. The tidal current, together with the coastal current during the Southwest Monsoon, sometimes attains a velocity of 4 knots.

6.32 Ganjam (19°23'N., 85°04'E.) lies on the N bank of the Rushikulya River close W of its entrance, but very little of

the town can be seen from seaward. A fort in ruins lies on rising ground on the S side of the town; N of the town the land is low.

The port of Ganjam is little used because of the heavy surf and shifting banks.

Paluru Bluff (19°26'N., 85°08'E.), 177m high, lies about 6 miles NE of Ganjam and is the bold NE termination of the high mountain ranges of the Ganjam District. Kujidheppo Peak, saddle-shaped and 340m high, rises about 6 miles N of Ganjam. Mount Chandikho rises to an elevation of 462m on the W shore of Chilka Lake. The summit, which lies about 16 miles N of Paluru Bluff, appears as a double-peak when viewed from the S, and lies out against the high ranges to the W.

A low beach of sandhills extends 32 miles NE from Paluru Bluff to Chilka Mouth, the entrance of Chilka Lake. There are few landmarks found along this part of the coast. Mita Kua Bungalow, a small white house on a sandhill close to the coast about 20 miles ENE of Paluru Bluff, is the most conspicuous. A beacon lies on the coast about 13 miles ENE of the above bluff. Sandari Beacon lies about 5 miles ENE of Mita Kua Bungalow. Babeswal Temple, painted black, lies about 2.3 miles NE of Sandari Beacon and is sometimes visible among the trees.

Danai (19°59'N., 85°20'E.), a conspicuous sharp peak, rises to an elevation of 577m about 22 miles NNW of Mita Kua Bungalow and is a useful mark on a clear day.

Chilka Lake (19°45'N., 85°23'E.), a large shallow expanse of water, is separated from the sea by a long, narrow sandy ridge. Only boats can be accommodated.

The coast between Chilka Mouth and Puri continues low and sandy. Harchandi Temple lies on a sandhill about 0.8 mile inland and about 4 miles NE of Chilka Mouth.

Puri (19°48'N., 85°50'E.) ([World Port Index No. 49530](#)), an open roadstead, lies on a low sandy ridge on the coast where large buildings stretch about 3 miles fronting the sea. Puri Light is shown from a white pedestal on the wall of a two story building.

Storm signals are displayed at the flagstaff which lies 0.2 mile SW of the light structure; the [Brief System](#) is used.

Anchorage can be obtained off the town, in fine weather, in a depth of about 14m, good holding ground. The soundings of depths should be continuous while an approach is being made to the anchorage.

6.33 Baleshwar Temple (19°50'N., 85°56'E.), a small, black, pagoda-shaped building surrounded by trees, stands about 7 miles ENE of Puri Light. Only the upper part of the temple is visible from seaward.

The Kushbhadra River entrance, marked by a temple with two palms near it, discharges about 13.5 miles ENE of Puri Light. The river is shallow and of no importance to shipping.

A black pagoda in ruins lies in the village of Konarak, about 16 miles ENE of Puri Light and 2 miles inland. This pagoda is about 40m high and prominent. From the NE it resembles a black pyramid.

Tundaha Obelisk (19°54'N., 86°13'E.), 4.6m high, stands on a sandhill about 7 miles E of the above black pagoda.

The **Devi River** (19°59'N., 86°24'E.), one of the largest branches of the Mahanadi River, flows into the sea N of Devi

Point. This point can best be identified by Balijori Obelisk, which lies about 2.5 miles NNE of the point. Nulyasai Village is also conspicuous to approaching vessels in the vicinity of Devi Point. The river is frequented only by native craft.

Central Sand, the shoal which extends from the river mouth, has been previously described in [paragraph 6.31](#).

Vessels with local knowledge can anchor off the mouth of the river NE and E of Devi Point. With onshore winds, anchorage can be taken, in a depth of 14.6m, with Balijori Obelisk bearing 317°, distant 1.5 miles. Anchorage can also be taken about 1 mile S of the above position when the winds are W.

Small vessels, with local knowledge and a draft not exceeding 3m, can anchor inside the river mouth, in a depth of 5.5m, with Devi Point bearing 057°, distant 0.5 mile.

The coast between Devi Point and the entrance of the Jatadharmohan River, about 17 miles NE, consists of low sandy beach marked by small hillocks. Breakers are always visible across the shallow entrance of this river. The entrance of the shallow Patakund River lies about 6 miles ENE of the mouth of the Jatadharmohan River. A prominent building lies near the shore, about 2 miles SW of the entrance of the Patakund River. A conspicuous water tower lies about 1 mile NE of the same entrance.

Paradip (20°16'N., 86°41'E.)

[World Port Index No. 49535](#)

6.34 Paradip, a lagoon-type harbor used almost solely for the handling of iron ore, lies on the coast about 6.5 miles ENE of the entrance of the Jatadharmohan River.

Port Authority of Paradip

<http://www.paradiport.com>

Depth—Limitations.—Vessels with drafts up to 12.8m can utilize this port (1984), but due to serious siltation problems, the maximum draft permitted is often much reduced.

There are nine berths that accompany the T-head pier. Berth No. 1 has an alongside depth of 13.2m that can accommodate a vessel from 60,000 to 75,000 dwt and a length of 155m. Berth No. 2 and Berth No. 3 have an alongside depth of 11.5m, and length of 260m; they can accommodate a vessel up to 40,000 dwt. Berth No. 4 and Berth No. 5 have an alongside depth of 12.5m, with a length of 230m; these berths can accommodate a vessel up to 60,000 dwt. Berth No. 6 through Berth No. 9 have an alongside depth of 13m, with a length of 230m, and can accommodate a vessel up to 60,000 dwt.

Berth No. 9, a fertilizer berth, is located close E of the leading lights on the NW side of the harbor. A new berth with a depth of 12m alongside has been constructed to the NW of the turning circle. The depth between the turning circle and these two berths is 10.5m

A berth for small vessels and lighters is located on the S end of the main wharf.

LASH operations are normally carried out between the mother ship at the anchorage and the lighter berths at the S end of the general cargo wharf.

Aspect.—Paradip Light is shown from a round concrete tower, 1.5 miles W of the entrance to the port. The entrance to the port is protected by a N and a S breakwater. A trestle pier projects from the S breakwater.

The channel leading into the inner harbor passes about midway between two breakwaters and then extends NW to the turning basin close SW of the T-head jetty on the E side of the harbor. The alignment of the main fairway is indicated by two pairs of lighted range beacons.

Pilotage.—Pilotage, which is compulsory, is only available from 0500 until 2100. Pilots board 2 miles SE of the harbor entrance.

The following information should be sent by radio when a vessel is within 40 to 60 miles to the port:

1. Name.
2. Port of departure.
3. Call sign.
4. Destination.
5. ETA.
6. GRT.
7. Length.
8. Breadth.
9. Draft.
10. Speed.
11. Number or cases of dangerous or contagious diseases.
12. Type and quantity of cargo.
13. Name of agent and requirements.

Signals.—Storm and weather signals are shown at Paradip; the [General System](#) is used.

Anchorage.—A general anchorage area, with a radius of 0.5 mile, lies centered on a point about 3 miles SE of the harbor entrance. A tanker anchorage area, with a radius of 0.5 mile, lies centered on a point about 1.3 miles E of the center of the general anchorage area.

Anchoring is prohibited in a triangular-shaped area lying in the approach to Paradip NE of the designated anchorage areas. This area is bound by lines joining the following positions:

- a. 20°14.6'N, 86°42.8'E
- b. 20°13.0'N, 86°45.8'E
- c. 20°16.1'N, 86°46.2'E

The low coast extends about 3 miles ENE and terminates at the Lion's Rump, on the S side of the entrance of the Mahanadi River. A conspicuous white house and a water tower stand about 0.5 mile SW of the Lion's Rump.

6.35 False Point (20°20'N., 86°44'E.), about 2.5 miles NNE of the Lion's Rump, lies between the two entrances of the Mahanadi River and has been reported to be a good radar target up to 17 miles. The lighthouse on the point is shown from a white, round, masonry tower with red bands; the lighthouse is difficult to see if there is a heat haze because it has a light-colored top and there is no background.

False Point has been reported to be a good radar target up to 17 miles.

A long tongue of land extends about 3.8 miles NE from False Point and almost meets and sometimes joins the S extremity of Nurra Baga Nassi, a low grass-covered narrow island about 5.8 miles long. A large stone building, with a banyan tree close by, stands on the W side of the island.

A drying shifting sand spit extends N and W from the N end of Nurrea Banga Nassi.

The **Mahanadi River** (20°18'N., 86°44'E.), a shallow passage available only to boats with local knowledge, is entered through two entrances. One passes S and E of the land on which False Point lies; the other passes W and N of this land.

The city of Cuttack, 55 miles above the river mouth, is the headquarters of the Orissa District.

False Point Anchorage (20°28'N., 86°47'E.) lies in the bay W of the N part of Nurrea Banga Nassi.

The outer anchorage, about 1 mile N of the N extremity of Nurrea Banga Nassi, has a depth of about 7.9m. A depth of 10m exists about 1 mile farther NE. The holding ground is fairly good, but a heavy swell is experienced. Anchorage is not recommended.

Small vessels can anchor in a depression about 1.5 miles long which lies W of the N part of Nurrea Banga Nassi, but local knowledge is necessary. Anchorage within the bay is safe, but the depths are shallow because of silting.

Caution.—With strong S winds, the flood sets toward the coast in the vicinity of Satbaia Sandhill about 15 miles N of the N end of Nurrea Banga Nassi. Vessels approaching from the N must guard against this current.

With a strong flood it is advisable to approach the anchorage on a S course. Such a current is noticeable by the rapid drift of the vessels to the N. Stemming the current by turning the vessel to port, to the E or NE, from a S course is advisable before anchoring. Vessels attempting to turn to starboard, or to the SW and NW, have been swept rapidly to the W and have grounded on the shoals extending from **Temple Point** (20°25'N., 86°44'E.).

The currents within the bay, W of Nurrea Banga Nassi, set through the channels at an average velocity of 2 knots at springs. During freshets on the Kharnasi River and the Jambu River, the ebb sometimes attains a rate of 4 to 5 knots and sets around the N end of Nurrea Banga Nassi.

The tides at False Point are semidiurnal.

Vessels approaching from the S, and having made False Point Light, should not shoal to depths of less than 18.3m until the light bears about 244°, distant 10 miles, and the large building on Nurrea Banga Nassi bears 100°. Course should then be altered to about 320° which will lead to the anchorage.

The Kharnasi River and the Jambu River, which flow into the W side of the bay W of Nurrea Banga Nassi, are shallow, subject to change, and available only to small vessels with local knowledge.

False Bay (20°31'N., 86°55'E.) lies between Nurrea Banga Nassi and Maipura Point, about 20 miles NE, at the entrance of the Maipura River. Depths in the bay decrease gradually toward the shore over a bottom of olive-green mud, in the S part, to a bottom of sand and mud, in the N part. The shore on the W of the bay consists of moderately-high sandhills.

Caution.—The Gahiramatha Marine Wildlife Sanctuary, best seen on the chart, lies roughly between the 10m and 20m contours in False Bay. Fishing, trawling, or any other activity harmful to marine life within this area is prohibited.

6.36 Satbaia Sandhill (20°38'N., 86°56'E.), 18m high with an isolated clump of trees at its NE end, lies 4.5 miles SW of Maipura Point. This hill is a good landmark.

Long Sand, an extensive drying shoal with the six small Wheeler Islands on its N part, extends about 2.5 miles N and NW from Maipura Point. The sea breaks heavily over this shoal.

The **Maipura River** (20°42'N., 87°00'E.), about 5 miles W of Maipura Point, is entered between this point and the SW extremity of Long Sand. Although the river is deep, numerous flats obstruct its entrance and it can only be entered by boats at half tide when the water is smooth.

Anchorage can be taken off Maipura Point, in depths of 11 to 12.8m, with the N end of the sandhills on Maipura Point bearing NW, distant 2.8 miles. Protection is provided from NW winds.

Shortt Island (20°47'N., 87°05'E.), 3m high, is the largest of four small islands which lie on a drying shoal about 3 miles N of Maipura Point. The configuration of the island is constantly changing due to the continuous action of the sea. A tower, 17.3m high, stands close off the E side of the island.

Palmyras Shoals, which lie off the seaward side of Shortt Island, have been previously described in [paragraph 6.31](#).

Anchorage can be taken, in depths of 11 to 12.8m, about 4 miles NE of Shortt Island. During strong SW winds good anchorage can be taken, in a depth of 12.8m, with the middle of Shortt Island bearing 206°. Vessels intending to anchor should approach with the middle part of Shortt Island bearing 226°. At night, anchorage should be taken in depths of 11 to 12.8m.

The **Dhamra River** (20°47'N., 86°58'E.), the most important of the navigable rivers of the Orissa District, forms the N outlet for the confluence of the Brahmani River, the Kharsua River, and the Baitarani River.

The town of Chandbali lies on the N bank of the Baitarani River, about 8 miles above the junction of the Baitarani River and the Dhamra River, and about 18 miles above the entrance of the latter river.

The area off the Dhamra River entrance embraces Shortt Island, Wheeler Island, Long Sand, Palmyras Shoals, and extensive drying sand and mud flats.

The river is entered about 6 miles W of Shortt Island, between Palmyras Point on the S side and an unnamed low, muddy point about 1 mile NW.

The extensive drying mud and sand flats extend about 2.5 miles offshore between the entrances of the Maipura River and the Dhamra River.

Shallow flats extend up to 6 and 7 miles offshore between the entrance of the Dhamra River and Balisahi Point, about 4.3 miles to the N. Kanika Sand is the S extremity of these flats.

6.37 Kanika Sand (20°47'N., 87°00'E.), an extensive drying mud and sand flat, lies on the N side of the entrance channel about 0.8 to 5.5 miles W of Shortt Island. This flat has been reported extending to the SE.

The outer bar, which has a least depth of 1.5m, lies about 1.3 miles NNW of the middle of Shortt Island. The inner bar, S of Kanika Sand, has a least depth of 2.4m.

The outer bar maintains its position and depths, but the inner bar is subject to change.

Chandnipal Bar lies in the fairway N of Kalibhanja Dian, a long, narrow island which lies on the middle of the river close within the river. This bar had a least depth of 5.2m.

The several other bars which lie within the river were reported to have depths of 2.4 to 2.7m at certain stages of the tide.

In 1960, a vessel drawing up to 3.7m at HW and up to 1.5m at LW, could ascend the river to Chandbali.

The Matai Nadi joins the Dhamra River about 3.8 miles above the entrance of the latter river entrance. Vessels with a draft of 2.4m have been reported able to navigate the Matai Nadi at LW.

Palmyras Point (20°46'N., 86°59'E.), about 6 miles W of Shortt Island, is the N extremity of the low land which lies between the Maipura River and the Dhamra River. The point is difficult to distinguish because of the dense jungle growth which covers it. The low land on the N side of the Dhamra River presents a similar aspect as far N as Balisahi Point, about 4 miles distant.

Three beacons, each 24m high with a ball topmark, stand in the vicinity of the entrance of the Dhamra River. These aids are visible from seaward, but are not easy to identify outside the outer bar.

The entrance channel over the outer and inner bars is buoyed and the channels within the river are buoyed in places. These

buoys are liable to be moved to conform to changes in the channels and are not to be relied upon.

The buoyed entrance channel passes about 0.8 mile N of Shortt Island, and then leads between the shoals extending from it and Kanika Sand. It then leads W between Kanika Sand and the N edge of the flats which extend E from Palmyras Point. This latter stretch leads to the entrance of the Dhamra River and passes N of the island lying in the middle of the river close within the entrance.

Pilotage is not compulsory, but advisable for strangers.

The jetty at Chandbali provides berths for three small vessels with a maximum draft of 3.7m. Passengers and cargo are usually embarked and discharged alongside the jetty.

Weather signals are displayed at Chandbali; the [Brief System](#) is used.

Vessels with local knowledge can anchor in mid-channel off the town of Chandbali, in depths of 8.2 to 12.2m.